

**SINGLE-MODE VERTICAL CAVITY SURFACE EMITTING LASERS
AND METHODS OF MAKING THE SAME**

ABSTRACT

In one aspect, a vertical cavity surface emitting laser (VCSEL) is operable
5 to generate single-mode laser light at an operative wavelength. The VCSEL
includes a light-emitting surface and a monolithic longitudinal stack structure.
The longitudinal stack structure includes a first mirror, a second mirror, and a
cavity region. The cavity region is disposed between the first mirror and the
second mirror and includes an active light generation region and a cavity
10 extension region. The longitudinal stack structure further includes an ion-
implanted current confinement region. A VCSEL array incorporating the above
described VCSEL and a method of making the above-described VCSEL also are
described.